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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/772,315	02/06/2004	Jae-Dong Yoon	0630-1953P	6483

2292 7590 05/07/2007
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EXAMINER	
EWALD, MARIA VERONICA	
ART UNIT	**PAPER NUMBER**
1722	

NOTIFICATION DATE	DELIVERY MODE
05/07/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

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Office Action Summary	Application No.	Applicant(s)	
	10/772,315	YOON ET AL.	
	Examiner	Art Unit	
	Maria Veronica D. Ewald	1722	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12/28/06 and 2/8/07*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15 and 23-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *23* is/are allowed.

6)☒ Claim(s) *1-15 and 24-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *25 April 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *12/28/06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Allowable Subject Matter

13. Claim 23 is allowed. The following is a statement of reasons for the indication of allowable subject matter: Prior art fails to teach, either alone or in combination, a molding system, wherein the molding system has an inner wall passage provided with flow accelerating material means, the same flow accelerating material means as that coated on the inner walls of both the fixed and movable molds.

Claim Rejections - 35 USC § 102

14. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 – 6, 8, 12 – 15, 24 and 26 are rejected under 35 U.S.C. 102(b) as being anticipated by Bodkins, et al. (U.S. 3,544,518). Bodkins, et al. teach an injection mold comprising: a fixed mold having a passage for injecting a fluid therethrough and an internal space (figure 1; column 2, lines 55 – 60); a movable mold detachably attached to the fixed mold and forming a molding space together with the internal space of the fixed mold (figure 1; column 2, lines 55 – 60); and a same flow accelerating material means provided on the inner walls of

both the fixed mold and the movable mold that form the molding space for increasing insulation of the fluid and reducing a flow resistance between the inner walls and the fluid so as to accelerate flow of the fluid injected into the injection mold (items 3 and 3' – figure 1; column 2, lines 57 – 62); wherein the same flow accelerating material means is a solid coating material (column 3, lines 45 – 63); wherein the solid coating material is a polymer coating material (column 3, lines 50 – 53); wherein the polymer used for the polymer coating material is PEEK (poly ether ether ketone) (column 3, lines 50 – 53); wherein the polymer coating material is one of PTFE (polytetrafluoroethylene), PE (polyethylene), and methacrylates (column 3, lines 50 – 53); wherein the solid coating material is a ceramic coating material (column 3, lines 57 – 59).

With respect to claim 8, the reference further teaches an injection mold comprising: a fixed mold having a passage for introducing a fluid therethrough and an internal space (column 1, lines 28 – 30); a movable mold detachably attached to the fixed mold and forming a molding space together with the internal space of the fixed mold (figure 1; column 2, lines 55 – 60); and a flow accelerating means provided on an inner wall of the molding space for accelerating flow of the fluid; wherein the flow accelerating means is a solid coating for increasing insulation of the fluid and reducing a flow resistance between the inner wall and the fluid so as to accelerate flow of the fluid and wherein the solid coating material is a solid lubricant (items 3 and 3' – figure 1; column 2, lines 57 – 62).

With respect to claims 12 – 15, Bodkins, et al. also teach a molding system comprising: a cylinder having an inlet and an outlet; a screw installed inside the cylinder and making a mold material and a mixture including a plastic introduced into the inlet of the cylinder flow toward the outlet; a heater for heating the mold material and mixture introduced in the cylinder (column 4, lines 35 – 45); a fixed mold having a passage for injecting a fluid therethrough and an internal space (figure 1); a movable mold detachably attached to the fixed mold and forming a molding space together with the internal space of the fixed mold (figure 1); and a same flow accelerating material means provided on the inner walls of both the fixed mold and the movable mold that form the molding space for increasing insulation of the fluid and reducing a flow resistance of the fluid (column 2, lines 57 – 62) so as to accelerate flow of the fluid injected into the injection mold (items 3 and 3' – figure 1; column 2, lines 57 – 62); wherein a foaming agent supplier is provided at the side of the inlet of the cylinder to supply a foaming agent into the cylinder (column 4, lines 25 – 35); wherein a gas supplier is provided at the side of the inlet of the cylinder to supply a gas into the cylinder (column 4, lines 25 – 35); and wherein the flow accelerating means is a solid coating material.

With respect to claims 24 and 26, the reference further teaches that the same flow accelerating material means is a solid coating material for increasing insulation of the fluid and reducing a flow resistance of the fluid, and wherein the solid coating material is at least one of PE (Polyethylene) and a methacrylate (column 3, lines 50 – 55); and wherein the same flow accelerating material

means is a solid coating material for increasing insulation of the fluid and reducing a flow resistance of the fluid, and wherein the solid coating material is at least one of PEEK (Poly Ether Ether Ketone), PE (Polyethylene) and a methacrylate (column 3, lines 50 – 55).

Claims 1 – 12, 15, 24 – 26 are rejected under 35 U.S.C. 102(b) as being anticipated by Yotsutsuji, et al. (U.S. 4,225,109). Yotsutsuji, et al. teach an injection mold comprising: a fixed mold having a passage for injecting a fluid therethrough and an internal space (item 1 – figure 1; column 3, lines 50 – 51; column 4, lines 35 – 36); a movable mold detachably attached to the fixed mold and forming a molding space together with the internal space of the fixed mold (item 1' – figure 1; column 4, lines 30 – 33); and a same flow accelerating material means provided on the inner walls of both the fixed mold and the movable mold that form the molding space for increasing insulation of the fluid and reducing a flow resistance between the inner walls and the fluid so as to accelerate flow of the fluid injected into the injection mold (item 13 and 13' – figure 1; column 2, lines 45 – 60; column 4, lines 1 – 5, 30 – 35); wherein the same flow accelerating material means is a solid coating material (column 2, lines 45 – 60); wherein the solid coating material is a polymer coating material (column 4, lines 22 – 26); wherein the polymer used for the polymer coating material is PEEK (poly ether ether ketone) (column 4, lines 22 – 26); wherein the polymer coating material is one of PTFE (polytetrafluoroethylene), PE (polyethylene), and methacrylates (column 4, lines 22 – 26).

With respect to claims 6 – 7, Yotsutsuji, et al. further teach that the solid coating material is a ceramic coating material (column 4, lines 10 – 15); wherein the ceramic coating material is one of aluminum oxide and zirconium oxide (column 4, lines 15 – 19).

With respect to claims 8 – 9, the reference teaches an injection mold comprising: a fixed mold having a passage for introducing a fluid therethrough and an internal space (item 1 – figure 1; column 3, lines 50 – 51; column 4, lines 35 – 36); a movable mold detachably attached to the fixed mold and forming a molding space together with the internal space of the fixed mold (item 1' – figure 1; column 4, lines 30 – 33); and a flow accelerating means provided on an inner wall of the molding space for accelerating flow of the fluid; wherein the flow accelerating means is a solid coating for increasing insulation of the fluid and reducing a flow resistance between the inner wall and the fluid so as to accelerate flow of the fluid and wherein the solid coating material is a solid lubricant (item 12 – figure 1; column 2, lines 45 – 60; column 3, lines 50 – 60); wherein the solid lubricant is one of graphite, molybdenum and disulfide (column 4, lines 1 – 3, 10 – 15).

With respect to claim 10 – 11, the reference teaches an injection mold comprising: a fixed mold having a passage for introducing a fluid therethrough and an internal space (item 1 – figure 1; column 3, lines 50 – 51; column 4, lines 35 – 36); a movable mold detachably attached to the fixed mold and forming a molding space together with the internal space of the fixed mold (item 1' – figure 1; column 4, lines 30 – 33); and a flow accelerating means provided on an inner

wall of the molding space for accelerating flow of the fluid (column 2, lines 45 – 60; column 3, lines 55 – 65); wherein the flow accelerating means is a solid coating metal material for increasing insulation of the fluid and reducing a flow resistance between the inner wall and the fluid so as to accelerate flow of the fluid, and wherein the solid coating material is a solid metal (item 12 – figure 1; column 2, lines 45 – 60; column 3, lines 50 – 60); wherein the solid coating metal material is one of lead, indium, cadmium, tin and silver (column 3, lines 55 – 62).

With respect to claim 12 and 15, Yotsutsuji, et al. teach a molding system comprising: a cylinder having an inlet and an outlet; a screw installed inside the cylinder and making a mold material and a mixture including a plastic introduced into the inlet of the cylinder flow toward the outlet; a heater for heating the mold material and mixture introduced in the cylinder (column 3, lines 45 – 50; column 4, lines 30 – 35, 45 – 55); a fixed mold having a passage for injecting a fluid therethrough and an internal space (item 1 – figure 1); a movable mold detachably attached to the fixed mold and forming a molding space together with the internal space of the fixed mold (item 1' – figure 1); and a same flow accelerating material means provided on the inner walls of both the fixed mold and the movable mold that form the molding space for increasing insulation o the fluid and reducing a flow resistance between the inner walls and the fluid so as to accelerate flow of the fluid injected into the injection mold (item 12 and 12' – figure 1; column 2, lines 45 – 60; column 4, lines 1 – 5, 30 – 35); wherein the flow accelerating means is a solid coating material (item 12 and 12' – figure 1; column 2, lines 45 – 60; column 4, lines 1 – 5, 30 – 35).

With respect to claims 24 – 26, Yotsutsuji, et al. further teach that the same flow accelerating material means is a solid coating material for increasing insulation of the fluid and reducing a flow resistance of the fluid, and wherein the solid coating material is at least one of PE (Polyethylene) and a methacrylate (column 4, lines 22 – 26); wherein the solid coating material is zirconium oxide (column 4, lines 15 – 19); and wherein the same flow accelerating material means is a solid coating material for increasing insulation of the fluid and reducing a flow resistance of the fluid, and wherein the solid coating material is at least one of PEEK (Poly Ether Ether Ketone), PE (Polyethylene) and a methacrylate (column 4, lines 22 – 26).

Claims 1 – 3, 5, 12 – 15, 24 and 26 are rejected under 35 U.S.C. 102(b) as being anticipated by Hendry (U.S. 4,201,742). Hendry teaches a fixed mold having a passage for injecting a fluid therethrough and a internal space (item 12 – figure 1); a movable mold detachably attached to the fixed mold and forming a molding space together with the internal space of the fixed mold (item 10 – figure 1); and a same flow accelerating material means provided on the inner walls of both the fixed mold and the movable mold that form the molding space for accelerating flow of the fluid injected into the injection mold (column 3, lines 55 – 60); wherein the same flow accelerating material means is a solid coating material for increasing insulation of the fluid and reducing a flow resistance of the fluid (column 3, lines 55 – 60); wherein the solid coating material is a polymer coating material and wherein the polymer coating material is one of PTFE

(polytetrafluoroethylene), PE (polyethylene) and methacrylates (column 3, lines 55 – 57).

With respect to claims 12 – 15, Hendry teaches a molding system comprising: a cylinder having an inlet and an outlet; a screw installed inside the cylinder and making a mold material and a mixture including a plastic introduced into the inlet of the cylinder flow toward the outlet; a heater for heating the mold material and mixture introduced in the cylinder (column 2, lines 65 – 68; column 6, lines 20 – 30); a fixed mold having a passage for injecting a fluid therethrough and an internal space (item 12 – figure 1); a movable mold detachably attached to the fixed mold and forming a molding space together with the internal space of the fixed mold (item 10 – figure 1); and a same flow accelerating material means provided on the inner walls of both the fixed mold and the movable mold that form the molding space for increasing insulation of the fluid and reducing a flow resistance of the fluid (column 3, lines 55 – 60) so as to accelerate flow of the fluid injected into the injection mold (column 3, lines 55 – 60); wherein a foaming agent supplier is provided at the side of the inlet of the cylinder to supply a foaming agent into the cylinder (column 1, lines 15 – 25); wherein a gas supplier is provided at the side of the inlet of the cylinder to supply a gas into the cylinder (column 1, lines 15 – 25); and wherein the flow accelerating means is a solid coating material.

With respect to claims 24 and 26, Hendry further teaches that the same flow accelerating material means is a solid coating material for increasing insulation of the fluid and reducing a flow resistance of the fluid, and wherein the

solid coating material is at least one of PE (Polyethylene) and a methacrylate (column 3, lines 55 – 57); and wherein the same flow accelerating material means is a solid coating material for increasing insulation of the fluid and reducing a flow resistance of the fluid, and wherein the solid coating material is at least one of PEEK (Poly Ether Ether Ketone), PE (Polyethylene) and a methacrylate (column 3, lines 55 – 57).

Claims 1 – 3, 8, 12 and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Kataoka, et al. (U.S. 5,362,226). Kataoka, et al. teach an injection mold comprising: a fixed mold having a passage for injecting a fluid therethrough and an internal space (figure 1; column 2, lines 55 – 60); a movable mold detachably attached to the fixed mold and forming a molding space together with the internal space of the fixed mold (figure 1; column 2, lines 55 – 60); and a same flow accelerating material means provided on the inner walls of both the fixed mold and the movable mold that form the molding space for increasing insulation of the fluid and reducing a flow resistance between the inner walls and the fluid so as to accelerate flow of the fluid injected into the injection mold (column 1, lines 45 – 55); wherein the same flow accelerating material means is a solid coating material (column 1, lines 50 – 55); wherein the solid coating material is a polymer coating material (column 1, lines 50 – 55).

With respect to claim 8, the reference further teaches an injection mold comprising: a fixed mold having a passage for introducing a fluid therethrough and an internal space (figure 1; column 2, lines 55 – 60); a movable mold

detachably attached to the fixed mold and forming a molding space together with the internal space of the fixed mold (figure 1; column 2, lines 55 – 60); and a flow accelerating means provided on an inner wall of the molding space for accelerating flow of the fluid; wherein the flow accelerating means is a solid coating for increasing insulation of the fluid and reducing a flow resistance between the inner wall and the fluid so as to accelerate flow of the fluid and wherein the solid coating material is a solid lubricant (column 1, lines 50 – 55).

With respect to claim 12 and 15, the reference also teaches a molding system comprising: a cylinder having an inlet and an outlet; a screw installed inside the cylinder and making a mold material and a mixture including a plastic introduced into the inlet of the cylinder flow toward the outlet; a heater for heating the mold material and mixture introduced in the cylinder (column 12, lines 1 – 15); a fixed mold having a passage for injecting a fluid therethrough and an internal space (column 2, lines 55 – 60); a movable mold detachably attached to the fixed mold and forming a molding space together with the internal space of the fixed mold (column 2, lines 55 – 60); and a same flow accelerating material means provided on the inner walls of both the fixed mold and the movable mold that form the molding space for increasing insulation of the fluid and reducing a flow resistance between the inner walls and the fluid so as to accelerate flow of the fluid injected into the injection mold (column 1, lines 50 – 55); wherein the flow accelerating means is a solid coating material (column 1, lines 50 – 55).

Response to Arguments

15. Applicant's arguments filed February 8, 2007 have been fully considered but they are not persuasive. Applicant argued that both Yotsutsuji, et al. (U.S. 4,225,109) and Hendry (U.S. 4,201,742) do not teach same flow accelerating means provided on the inner walls of the mold (fixed and movable) such that the means increases the insulation of the fluid flow and reduces the flow resistance between the inner walls and the fluid. With respect to the reference of Yotsutsuji, et al., Applicant has stated that the metal layer (item 12 – figure 1) of Yotsutsuji, et al. is heated immediately by the molten resin and further is not disclosed as reducing a flow resistance between the molding surface and the fluid. Examiner agrees; however, in this and the previous office action dated August 28, 2006, Examiner has cited items 13 and 13 ' as the flow accelerating means provided on the inner walls of both the movable and fixed molds. Though the flow accelerating means is not *directly coated or applied on the mold walls, it is still provided on the walls themselves, just on top of the metal layer. However, the flow accelerating means is still provided on the walls, as claimed.*

With respect to the reference of Hendry, Applicant has argued that the coating of Hendry does not reduce a flow resistance between the molding surface and the fluid. Examiner disagrees. Though not explicitly disclosed by Hendry, the coating *inherently reduces a flow resistance and increases insulation since it reduces cooling of the resin and allows the heat of the resin to remain at the surface (column 3, lines 55 – 60). Thus, by deterring or slowing down the*

cooling of the resin, the resin remains heated longer, and by remaining heated, is allowed to fluid more readily between the mold walls.

Furthermore, Examiner has cited the additional references of Bodkins, et al. and Kataoka, et al., provided by Applicant. Both references teach coating materials, which increase the cooling time of the resin, and allows the resin to retain its heat longer. *Thus, since the resin remains heated for a longer period of time, it is allowed to flow more readily between the mold walls. Therefore, the coating material acts to increase insulation and reduce a flow resistance between the mold walls and the resin or fluid.*

Conclusion

16. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a). Furthermore, Applicant's submission of an information disclosure statement under 37 CFR 1.97(c) with the fee set forth in 37 CFR 1.17(p) on December 28, 2006 prompted the additional new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 609.04(b). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory

action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Maria Veronica D. Ewald whose telephone number is 571-272-8519. The examiner can normally be reached on M-F, 8 - 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dr. Yogendra Gupta can be reached on 571-272-1316. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service

Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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